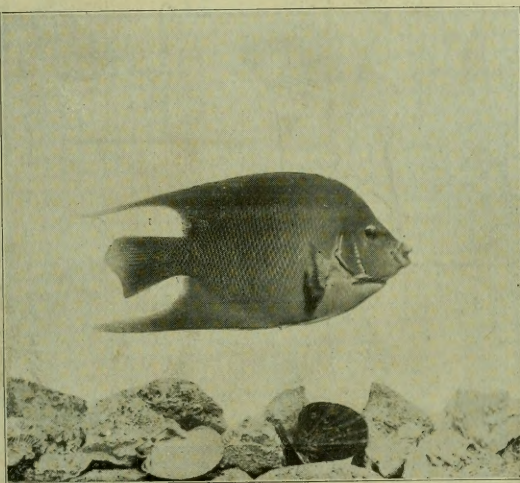


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FISH

THE AQUARIUM

ISSUED IN THE INTERESTS
OF THE STUDY, CARE AND
BREEDING OF AQUATIC LIFE



BLUE ANGEL FISH, *Angelichthys ciliaris*

Photograph published by courtesy of the New York Zoological Society

590.773

Fishes

APRIL 1913

VOL. II

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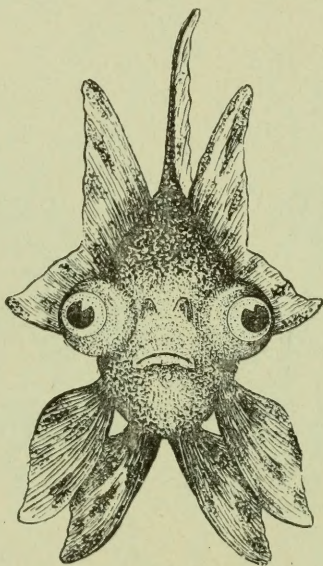
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GOLDEN-ORFES
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FROM COL. CHI. ACAD. SCIENCES.

PLATE I.
LAND AND RIVER SHELLS

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Physa gyrina (U. S.)
Pleurocera elevatum (U. S.)
Vivipara contectoides (U. S.)

Melania tetrica (Viti Islands.)
Planorbis trivolvis (U. S.)
Ampullaria depressa (U. S.)
Campeloma subsolidum (U. S.)

Angitrema verrucosa (U. S.)
Limnaea stagnalis (U. S.)
Limnaea megasoma (U. S.)

THE AQUARIUM

VOLUME II

APRIL, 1913

NUMBER 1

The Blue Angel Fish.

JOHN TREADWELL NICHOLS, New York.

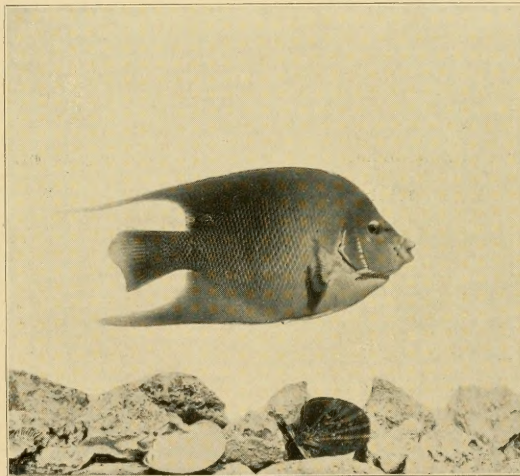
THE most modern, best equipt fish is a short-bodied animal, pointed in front and behind, more or less flattened from side to side, with fins which propel it and direct and check its motion through the water. It has a firm skeleton of bone, and sharp erectile spines on the back and in some of the fins protect it from its neighbors. Its body is covered with thin, plate-like, overlapping scales which give a firm surface to press against the water.

The blue angel fish is just such a modern species. If we examine some of the many kinds of fishes which swarm in the ponds, streams and seas of the world, we will find that a great part, but not all, of them come up to this standard. The sharks and dogfish lack the bony skeleton and covering of scales, the dace and goldfish have not the spiny fins and are sometimes pushed to the wall (of the aquarium) by sunfish, which have.

A study of the past history of fishes, as recorded in those which are preserved

as fossils in the rocks, shows that the less well equipt kinds came before the better equipt ones and are, in a sense, old fashioned. Old fashioned species are sometimes remarkably tough, however. If a mixed lot of fishes be hauled up in a net from rather deep water, many will lie at the surface dying or helpless, the change in pressure having caused their stomachs to pop out of their mouths, or otherwise damaged them. But the dogfish will squirm and snap on deck, and if thrown overboard, promptly start to swim down again, little worse for wear.

The zone where most species of fishes are to be found is along the shore. Further down under the depths of the



BLUE ANGEL FISH, *Angelichthys ciliaris*

Photograph published by courtesy of the New York Zoological Society

ocean, or out over its surface, or up the rivers into fresh water, there is less variety of fish life. Fishes are also fewer in the colder water toward the poles than along tropical shores where the coral reefs harbor innumerable varieties. It is on these reefs, in the very center of the fish world, that the blue angel fish, *Angelichthys ciliaris* (*ichthys* means fish and *ciliaris*, from a word meaning lash, refers to the gaudy

streamers which terminate its upper and lower fins), is at home. Its body is bright blue or violet, its fins yellow and red. Of all the beautiful, gaudy fishes found at Bermuda, this one is pre-eminent, and tourists often bring back stickpins with representations of it as souvenirs of that island. Specimens are often brought from there and kept in the New York Aquarium. Despite their angelic appearance, they are armed with savage spines, and many other species cannot safely be kept in the same tank with them. The angel fish has a small mouth and doubtless feeds mostly on shrimps and other small animals. It is found on coral reefs from Brazil to the Florida Keys and the Bermudas, reaches a length of one or two feet, and is a fair food fish.

On Getting Rid of Hydra.

L. M. DORSEY, Jr., Philadelphia.

IN a collection of aquatic snails secured from a prominent German dealer I acquired several specimens of what the Germans call *Ampullaria gigas*, popularly called by them the American Deckelschnecke. Upon careful examination, I recognized it as the species called Singapore Snail in this country.

The genus *Ampullaria* comprises many species and occurs in Africa as well as South America. While I have said that my specimen is referable to *A. gigas*, it more closely resembles and might properly be considered *A. doloides*. *Ampullaria gigas* attains the size of a large orange, *doloides* is not so large. These snails have a beautifully marked thin brown horny shell and heel.

In their native haunts the *Ampullaria* are said to deposit their spawn on the

overhanging limbs of trees, or on the rocks, but always above water. The mass of eggs resembles a half raspberry of salmon-pink color about one-third the size of the snail. Twenty to thirty days are required for the development of the eggs which are then released from their hardened encasing, falling into the water perfect little snails. Probably twenty-five to forty may result from a spawn.

Their usual food is green, growing aquatic vegetation, making their presence in the aquarium undesirable and very destructive. Some experiences have, however, proven certain carnivorous propensities. I have known weak and sickly young goldfish in crowded quarters to be devoured while still alive.

In various efforts to utilize these unusual characteristics they were placed in *Daphnia* tubs to consume the dead, and in this way were discovered to eat the *Hydra*. Further tests by the writer and others have revealed these snails as thorough and effective destroyers of *Hydra*, that pest of pests. My repeated experiments have convinced me that while *Hydra* are to be had, they will feed upon them in preference to plants, except possibly the tender, succulent kinds. In my case they have wrought no appreciable damage to the plants when used for cleaning out the *Hydra*. The task has never taken them longer than a week. I find that young snails are probably to be preferred as they are not so gross in their vegetable feeding and are just as active. In every case there was no return of the *Hydra*.

"Nature has placed in profusion about us objects to act on our senses so that they need never become atrophied from disuse." *Exchange*.

Girardinus reticulatus.

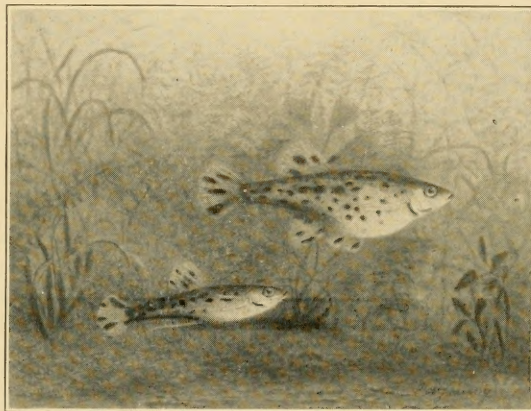
C. J. HEEDE, Brooklyn

THIS is a very pretty live-bearing fish found in Brazil, the West Indies and Venezuela. The color of its body is metallic-yellowish, covered with irregularly arranged jet black spots which extend also onto the fins and tail of both the males and females. It is an excellent fish for the aquarium, and grows to be about $1\frac{1}{2}$ inches long. It breeds readily in tanks, — in summer about every four to six weeks, in winter only if the water is kept at about 60° Fahrenheit or warmer. The number of young in each brood varies from ten to fifty. When born the young have a black spot on each side, as is characteristic of all *Girardinus*. They grow rapidly and soon attain the color of the parent fishes, and if born early in spring will start to breed in the latter part of the ensuing summer.

They take artificial food as well as raw scraped beef, live or dried *Daphnia* and *Cyclops*, and are also fond of vegetable food, especially fine algae, but they will not destroy the common living plant growth in the tank. They can be kept in a tank with other live-bearing fishes as *Poecilia*, *Mollienisia* and *Xiphophorus*, but not so well with any of the carnivorous species, as the different *Gambusia*, etc.

The young, newly born *Girardinus* must, of course, have the finest food; when two weeks old they will eat *Daphnia* and *Cyclops*. The parent fishes are seldom cannibalistic towards their young, but to be on the safe side, when trying to raise the young the upper part of the tank must be well filled with floating plants; some fine kind of *Utricularia* will serve as a good protection for the young against the parent fishes' possible attacks. The *Utricularia* is a carnivorous plant, and while it is perfectly safe to have it in

the tank for protection of newly born fishes of the live-bearing species, it cannot be safely kept in an aquarium with spawning fishes. The fry of *Trichogaster lalius*, for instance, are very small on leaving the eggs, and will be con-



GIRARDINUS RETICULATUS
Drawing from Life by E. S. Young.

sumed by the plant through the balls growing on it, which serve as traps for Infusoria, water insects, and very small fishes. Each ball has a kind of trap-door opening inward, and any small fishes which put their heads inside the open trapdoor are caught; it is claimed that some material inside the balls attracts the fishes. But as already mentioned, in aquaria with live-bearing fishes this plant is an excellent protection for the young against their parents and other fishes in the tank. They have the instinct to hide among the growth

and besides much food is ready for them there. A few days after the young are born, they are strong and alert enough to dodge the older fishes in the aquarium. It is advisable once in a month or so to partly renew the water in a tank containing *Girardinus*. The best way is to draw off with a thin rubber hose the refuse on the bottom, and after the cleaning restore the old level of the water with fresh water of the same temperature as that discarded. This partly renewing the water in the tank is beneficial to the fishes' health.

The Aquarium.

A Series of Articles on the Construction, Equipment and Maintenance of Aquaria, and the Breeding of Goldfish.

C. G. B. SCHENK, Milwaukee.

III. Equipping the Aquarium.

TO equip our aquarium we require sand and plants. Coarse sand is best for the plants. If the sand is fine and "packs" tight, small pebbles may be mixed with it. Stones, shells and ornaments should be left out by the beginner. Food or dead snails collect in the crevices and decay, causing trouble if not promptly removed. The cleaner the bottom of the tank, the less chance for sickness among your fishes.

Put in a bottom of two or three inches of sand. Two inches at the front will be sufficient, but this depth may be increased to three at the back where most of the plants will be placed.

Desirable aquatic plants cannot always be obtained in the smaller cities and towns, but may be secured from the dealers who advertise in THE AQUARIUM, several of whom make a specialty of propagating the right sorts.

The object of the plants, aside from adding beauty to the aquarium, is to

provide oxygen for the fishes. Water plants when in a healthy growing condition throw off oxygen which the fishes must have to live: the fishes throw off a gas which the plants absorb, therefore if you have sufficient plants to provide the fish with the necessary oxygen, you have a self-sustaining aquarium, the water in which need never be changed. This water will be absolutely pure, provided care has been exercised to avoid decaying food, dead snails, etc. Evaporation will take place, and occasionally you will have to fill your tank. Lest you have read what is stated above hastily, without grasping the meaning, let me repeat — *when you have sufficient plants in your aquarium to provide the fishes with the required amount of oxygen, you need never change the water.*

This makes it obvious that the more fishes you have, the more plants you will need. A better way to put it is — the less plants you have, the fewer fishes you can successfully keep, for naturally there is a limit to the number of plants you can place in your tank. Sufficient room must be left for the fishes to swim around comfortably.

There are many varieties of plants which can be grown in an aquarium, but we will only consider the more important kinds which are the best oxygenators, leaving the additions of others to the reader as his fancy dictates from time to time. *Vallisneria* and *Sagittaria* are the best of all aquarium plants. They are easily grown and are good oxygenators. *Cabomba* is a good summer plant and *Anacharis* a good winter grower. There are many other varieties which add much to the beauty of the aquarium.

Place the aquarium where the sun-

light will strike it. Plants need sunshine. In mid-summer, if the sun is strong, the tank can be protected by means of green tissue paper fastened to a light wooden frame. This can be placed behind the aquarium, when the sunlight is too strong. Too much sunlight will burn the plants. A little observation will determine this. Usually there is not enough sunlight except in mid-summer.

The question which frequently arises is, "How many fishes can I keep in my aquarium?" This question cannot be answered satisfactorily off-hand. The best way for the beginner is to commence with two or three fishes. When the plants have rooted and begun to grow, more can be added, a few at a time, until you have reached the limit of your tank. This can best be judged by the actions of the fishes. When they suck air at the top either the water is foul or there is a lack of oxygen. If you are satisfied that the water is pure, you have too many fishes or too few plants. The condition should be adjusted.

Later, when you desire to keep more fishes in your tank, or tanks, for many of us have a number, you will have to aerate the water by means of a pump. We won't take up the subject of air pumps as that is a side issue, and more in line with the advanced worker. No doubt there will be articles on this subject from time to time in the magazine.

We have gotten along in this series of articles to where we have selected our aquarium, equipped it with sand and plants, and are ready to select our fishes, and learn something about their care, feeding, breeding and raising of the fry. This will be left to subsequent articles, as the writer has been limited

as to space, and has already overstepped his allowance.

Before leaving the subject of equipment, allow me to caution the reader against putting shells, corals, sharp stones or ornaments in the tank. It is questionable from a standpoint of good taste, but more important is the danger of your fishes tearing their fins on the sharp edges. We have already mentioned that such things make lodging places for decaying food, dead snails, etc.

(To be continued.)

The fourth article will consider the selection of the goldfish for the aquarium.

The Genuine and the Counterfeit.

We have none too many books pertaining to nature. Indeed, could the habit of reading them be more generally induced that publisher who would offer extra inducements for their writing would be a philanthropist, for that way lies health and medicine of spirit and much needed relief from life's fretful fever. Nature, in this sense, is the great mother of us all, and happy is he who does not wander too far away to sometimes relish in a homecoming.

Those who produce nature literature are of two kinds — the genuine and the counterfeit. The latter is one who with a pale, reflected knowledge of nature, uses it as a peg on which to hang fine writing. The former has his unmistakable traits, and is known of all his brethren. If he is permeated to the core with love of the all-mother; if in his communion with her visible forms she really speaks to him a varied language; if, under her spell thoughts are liberated and inspiration gleams, then the fact will out, no matter what the style of expression. — *The Indianapolis News*.

THE AQUARIUM

Issued in the Interests of the Study, Care and Breeding of Aquatic Life

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VOL. II APRIL, 1913 No 1

IT has been quite aptly said, that it is not the rare, but the common species that give character to the animal and plant life of a region, and that the time and money expended in the successful or unsuccessful quest for some rare kind, could be far better employed in cultivating a more intimate acquaintance with the more "common things" about us. This assertion applies preeminently to the aquarist. In our mad rush to possess rare foreign fish, we overlook, or give scant attention to the interesting beauties in our own streams. Indeed, this passion to possess soon unconsciously, is apt to overstock us; to give us more fish than we are able to properly study.

Our neglect of the native species is much to be deplored. A deal of information is still to be learned regarding the life histories of many species. Much that is known is hidden away in abstruse

scientific works not accessible to the average man, even were he able to comprehend the obscure terms used in the usual technical description. Good work can be done placing this information in popular language in the hands of aquarists. There is a broad field to draw from, and a long time will elapse before we exhaust the resources at our own door-step.

In our hobby, we are too prone to consider the word collector synonymous with aquarist. A true aquarist is a scientist; an investigator delving in the veiled mysteries of many-sided Nature. The mere possession of a collection of fish means no more than a collection of postage stamps, not as much, unless the owner can demonstrate that they mean more to him than a mere piece of bric-a-brac in his parlor. Collecting is not a science, but an aid to its prosecution. Aquaria are tools, so to speak, where-with a certain kind of work may be done, and a man is no more an aquarist on account of their possession, than another may be a skilled carpenter because he has a chest of excellent tools. Each may be the means whereby a certain end is to be attained; the mistake consists in regarding the means as the end. It is too much the habit of men generally, to flatter themselves into the belief that because they have good collections, they are therefore really scientific investigators.

Tramping about the country netting fish is, no doubt, a very healthy occupation for the body, but it does not rise to the dignity of science, or merit regard as an intellectual pursuit. This is applicable to all departments of natural science.

A man should possess an aquarium, not solely as a beautiful ornament for his home, but to enable him to gain an intimate knowledge of the habits and peculiarities, instinctive or acquired, of the fish and other animals he has placed therein. In conclusion, the knowledge thus obtained should not be selfishly stored away, but given to fellow enthusiasts in the columns of THE AQUARIUM.

On Freshwater Snails.

Plate I.

W. A. POYSER. Hammond, Indiana.

WHILE much space has been devoted to snails by authors of books on aquaria, little effort is made by the average aquarist to secure more than a few species. Quite a number of interesting species are suitable for the household tank, provided they are selected with discretion. In the opinion of the writer the necessity of snails in the aquarium is somewhat over-emphasized, and that they should be kept as much for their interest as for the practical benefit as scavengers. I have yet to see an aquarium that did not require frequent cleaning regardless of the number of snails. Some species of fish devour more *Algae* than snails. I have in mind the red-bellied dace. When I clean the glass of my tanks, the dace gorge themselves. I use a safety razor blade. It is unnecessary to remove the *Algae* with a syphon.

Judgment must be used in selecting an assortment, lest the destruction of plants results. The misnamed Singapore snail is a gross plant eater and must be kept alone. The Niagara snail, *Limnaea stagnalis*, while a vigorous vegetarian, may be kept in the tank with impunity if one is satisfied with *one or two* individuals. This is one of the most attractive of the more common species. It spawns freely, but should be bred in a separate tank if it is desired to raise the young. The *Limnaeas* are air-breathers, having a lung, hence come to the surface to breathe. The genus is widely distributed all over the world from the arctic regions to the tropics. The young animals of this genus breathe air through the water, but later develop the characteristics of the mature snails and breathe the air direct. Water-breathers have gills which take oxygen direct from the water.

The *Ampullarias* come principally from the tropics. Usually the Singapore or Four-horned snail (*Ampullaria gigas*) is the only one readily obtainable. They are exceedingly tenacious of life and have been known to live for several years away from water. *Ampullaria depressa* occurs in the southern states, and is very common in the everglades. It forms a large part of the food of the everglade kite, a bird of the hawk family. I have never been able to secure living specimens. It breeds the same as *A. gigas*.

The *Planorbes* are probably the most popular of the native species. The species of the genus vary greatly in size from one-eighth to more than an inch in diameter. Like the *Limnaeas* they are found in all parts of the world. They deposit jelly-like masses of eggs which may be readily raised if protected from the fishes. *Planorbis trivolvis* is one of the most common American species. The red snail is an albino of the common European *Planorbis corneus* and shows a decided tendency to revert to the normal form. The *Planorbes* are commonly called orb, posthorn or ramshorn snails. They are hardy and a very desirable addition to the tank.

The *Physas* may be readily identified by the left-handed or sinistral shell, as opposed to the more common right-handed or dextral type. The shells are smooth and are from one-half to one inch in length. While this genus is widely distributed, the species are comparatively few in number. *Physa heterostropha* is probably more abundant than *P. gyrina* shown on the plate.

The Potomac snail (*Vivipara contectoides*), green apple snail (*Campeloma subsolidum*) and *Pleurocera elevatum* are all worthy of study. The first two named are ovo-viviparous, the Potomac snail being better known to aquarists. The *Pleurocera* is a trap-door species that contrasts well with the other kinds. All new species should be watched carefully before introduction into the tank, and destructive kinds avoided.

COMMENTS AND QUERIES

Definite details as to the effect of tobacco smoke on aquarium denizens would make an interesting article.

"We behold all round about us one vast union, in which no man can labor for himself, without laboring at the same time for all others." *Hyperion*.

The Bishop-Babcock-Becker Company has loaned the Chicago Fish Fanciers Club an electric air-pump, connected complete, to aerate the aquaria to be exhibited at the Art Institute.

Usually one considers a minnow to be invariably a small fish. The squawfish, *Ptychocheilus oregonensis*, a member of the minnow family, attains a length of two to four feet, showing that not all "minnies" are little fellows.

The Starhead, *Fundulus* or *Zygonectes nottii*, is a very pretty little spawning fish well worthy of aquarium culture. It is an inhabitant of Florida and neighboring states, and common in the great Okefenoke cypress swamp of southern Georgia. Its iridescent colors are relieved by bold, narrow, horizontal and sometimes vertical black stripings. There is an orange-red spot in front of, and another behind, the eye, and a shining silvery or greenish spot on top, just back of the head. In elegance of color, form and motion, it suggests the Asiatic genus *Haplochilus*. A few living individuals have recently been brought to New York.

Editor, THE AQUARIUM: There is something wrong with a pair of Hellerie. I noticed a few days ago that they are covered with little white specks — even the fins and the tail are covered with these specks. They appear as though some one had thrown some fine flour over the fish. I took both out of the tank and gave them a salt bath. I also put quite a quantity of salt in the tank, but I have not noticed any improvement so far. The water in the tank seems normal. What may be the trouble? Can you give me any advice what to do in this matter?

August M. Grau.

Editor, THE AQUARIUM: I would like to take advantage of your inquiry column to the extent of one or two questions. Of course it is early to find daphnia in our waters about here yet, but I understand from inquiry that they do not exist in New England. If this is the case, and in any case, is there any place where I can obtain live daphnia at this time, just enough to start a couple of tanks with them?

In the columns of "THE AQUARIUM" someone suggests the use of a microscope to examine fish for parasites, etc. This seems to be a very good idea, as when a fish shows signs of sickness, one hardly knows whether it is parasites or some other trouble; and if parasites, what kind and how dangerous. But I am at a loss to understand how it is possible to examine a live fish under a microscope, and if the parasite is so small it cannot be seen without a microscope, how do you go about it to get some of these for mounting to examine them under a microscope? I am trying to find something with which I can examine this minute life without removing same from the aquarium. Is this possible?

W. Stuart Allen.

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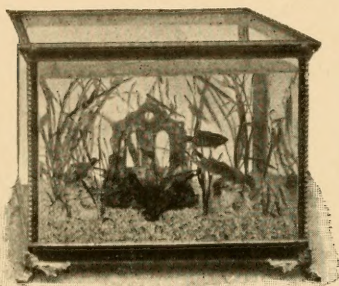
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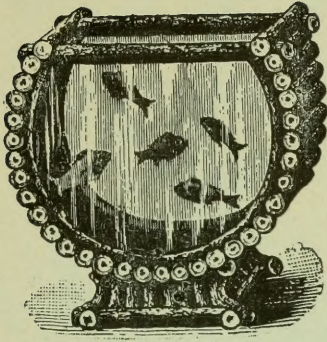
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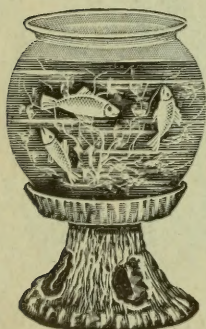
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